

Growth of BHK 21 Cells in Medium with Reduced Serum

Objective

Once cells have reached a sufficient cell density on the microcarriers, the level of serum in the medium may be reduced. This will significantly reduce the media and purification costs of a large industrial process. A series of experiments were carried out to determine whether it was possible to continue the culture using medium with reduced levels of serum.

Culture conditions

Vessels: 250 ml spinner vessels (Bellco-type).

Microcarriers: CultiSpher-G 1 g/L and solid microcarriers 1 g/l. Both prepared according to instructions.

Cell line: BHK 21

Medium: Glasgow modification of Eagles medium, 0.22% (w/v) sodium bicarbonate, 2 mM glutamine, 5% Newborn calf serum, penicillin G 100 IU/ml and streptomycin 100 ug/ml. pH was adjusted to 7.2 with hydrochloric acid.

Agitation speed: Initially, 50 and 45 rpm for CultiSpher-G and solid microcarriers respectively, increased to 60 and 55 rpm after 24 hours.

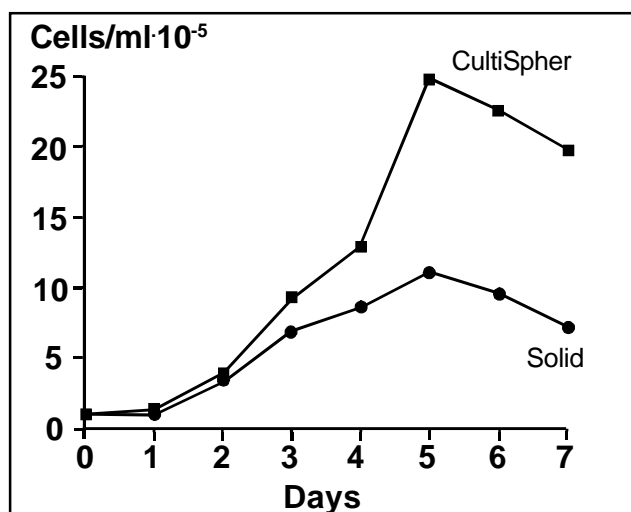


Figure 1. Culture medium with 5% serum

Discussion

The larger surface area provided by CultiSpher-G microcarriers resulted in cell yields of more than twice of that found on solid microcarriers, figure 1. In the cultures where the level of serum had been reduced to 1% after 3 days a marked difference was observed, figure 2. With solid microcarriers, the cell number increased rapidly for the first 3 days and then began to drop when the level of serum was reduced.

The CultiSpher-G culture showed a rapid increase over the first 3 days then, despite the reduced serum level, the number of cells continued to increase. It appears from the results that BHK 21 cells grown on CultiSpher-G are more tolerant to reduced levels of serum than if they are grown on solid microcarriers.

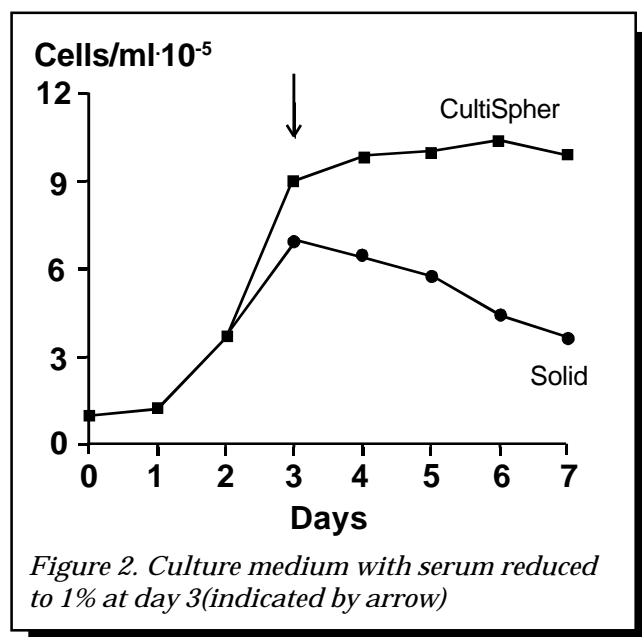


Figure 2. Culture medium with serum reduced to 1% at day 3 (indicated by arrow)

Reference

Beech, I. (1990) "A Comparative Study of Solid and Macroporous Microcarriers Using a Model Cell Line". Dissertation, Dept. Microbiology, University of Surrey, UK